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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,914	04/19/2007	Ingo Heim	ELI2-22962/APCT	7474
324 7590 04/08/2010 BASF Performance Products LLC Patent Department 540 White Plains Road P.O. Box 2005 Tarrytown, NY 10591				
EXAMINER				
SUCH, MATTHEW W				
ART UNIT		PAPER NUMBER		
2891				
NOTIFICATION DATE		DELIVERY MODE		
04/08/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/576,914

Applicant(s)

HEIM ET AL.

Examiner

MATTHEW W. SUCH

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2, 4-12, 14 and 19-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2, 8, 10-12, 14, 19, 22 and 24 is/are allowed.
- 6) ☒ Claim(s) 4-7, 9, 20, 21 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

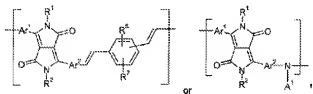
1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites "further comprising one or more repeating unit(s) Ar³ and/or repeating units -T- which repeating unit(s) Ar³..." in Lines 1-2. However, it is unclear if the presently recited units of Ar³ are referring back to the previously recited units Ar³ set forth in claim 2 or not. Furthermore, if the presently recited units of Ar³ are referring back to the Ar³ units from claim 2, then it is further unclear how the present Ar³ units can be repeating, since claims fails to set Ar³ as repeating. Additionally, if Ar³ is separate and distinct from the previous recitations thereof, then the claim is further unclear because the formula of claim 2 is not written in a manner that enables other groups to be further added therein. Regarding the recitation of -T-, this inclusion is indefinite because the formula of claim 2 is not written in a manner that enables other groups to be further added therein. As such, claim 4 does not properly further limit the polymer of the formula of claim 2. The claim also recites "R⁶ and R⁷ are independently of each other H, halogen, -CN, C₁-C₁₈alkyl, C₁-C₁₈alkyl which is substituted by E and/or interrupted by D, C₆-C₂₄aryl, C₆-C₂₄aryl which is substituted by G, C₂-C₂₀heteroaryl, C₂-C₂₀heteroaryl which is substituted by G, C₂-C₁₈alkenyl, C₂-C₁₈alkynyl, C₁-C₁₈alkoxy, C₁-C₁₈alkoxy which is

substituted by E and/or interrupted by D, C₇-C₂₅alkyl, -C(=O)-R¹⁷, -C(=O)OR¹⁷, or-C(=O)NR¹⁷R¹⁶" in Lines 12-16 and "wherein R⁶, R⁷, R⁹ and R¹⁰ are as defined above" in Lines 89-90. These recitations render the claim indefinite because it is unclear whether the present recitation of R⁶ is referring back to the previous recitation of R⁶ set forth in claim 2. Furthermore, the groups of the presently recited R⁶ do not further limit the groups of the previously recited R⁶ because claim 2 set forth that R⁶ is hydrogen, C₁-C₁₈alkyl, or C₁-C₁₈alkoxy.

3. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In addition to the reasons already set forth above for claim 4, which apply to claim 5 by virtue of its dependency on claim 4, claim 5 also recites "wherein the polymer comprise a repeating unit of the formula

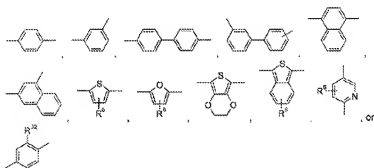


in Lines 1-3. However, this recitation renders the claim indefinite because the formula of claim 2 is not written in a manner that enables other groups to be further added therein. As such, claim 5 does not properly further limit the polymer of the formula of claim 2. The claim also recites "R⁶ and R⁷ are H, halogen, CN, C₁-C₁₂alkyl, C₁-C₁₂alkoxy or C₆-C₁₄aryl" in Lines 7-8. This recitation renders the claim indefinite because it is unclear whether the present recitation of R⁶ is referring back to the previous recitation of R⁶ set forth in claim 2. Furthermore, the groups of the

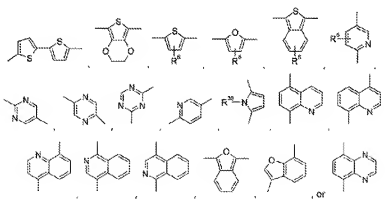
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presently recited R^6 do not further limit the groups of the previously recited R^6 because claim 2 set forth that R^6 is hydrogen, C_1 - C_{18} alkyl, or C_1 - C_{18} alkoxy.

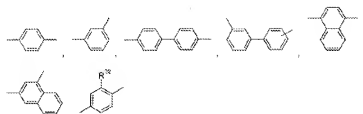
4. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In addition to the reasons already set forth above for claim 4, which apply to claim 6 by virtue of its dependency on claim 4, claim 6 also recites " Ar^1 and Ar^2 are independently of each other a group of formula



in Lines 6-9. However, this recitation renders the claim indefinite because the formula of claim 2 requires that Ar^1 and Ar^2 be groups of the formula

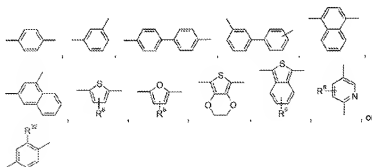


As such, Ar^1 and Ar^2 cannot be of the groups of the formula



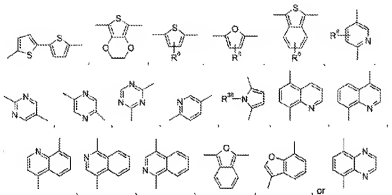
Therefore, the scope of the claimed polymer is indefinite.

5. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites "and a repeating units $-\text{[Ar}^3\text{]}-$ " in Line 3. However, it is unclear if the presently recited unit of Ar^3 is referring back to the previously recited unit Ar^3 set forth in claim 2 or not. Furthermore, if the presently recited unit of Ar^3 is referring back to the Ar^3 units from claim 2, then it is further unclear how the present Ar^3 unit can be repeating, since claims fails to set Ar^3 as repeating. Additionally, if Ar^3 is separate and distinct from the previous recitations thereof, then the claim is further unclear because the formula of claim 2 is not written in a manner that enables other groups to be further added therein. As such, claim 7 does not properly further limit the polymer of the formula of claim 2. The claim also recites " Ar^1 and Ar^2 are independently of each other a group of formula

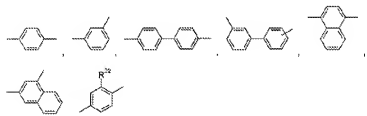


in Lines 5-8. However, this recitation renders the claim indefinite because the formula of claim

2 requires that Ar^1 and Ar^2 be groups of the formula

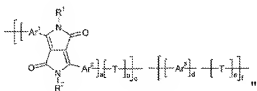


As such, Ar¹ and Ar² cannot be of the groups of the formula



Therefore, the scope of the claimed polymer is indefinite.

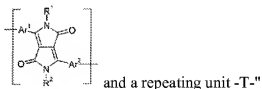
6. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites "wherein the polymer is a polymer of the formula



However, it is unclear if the presently recited units of Ar³ are referring back to the previously recited units Ar³ set forth in claim 2 or not. Furthermore, if the presently recited units of Ar³ are

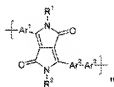
referring back to the Ar^3 units from claim 2, then it is further unclear how the present Ar^3 units can be repeating, since claims fails to set Ar^3 as repeating. Additionally, if Ar^3 is separate and distinct from the previous recitations thereof, then the claim is further unclear because the formula of claim 2 is not written in a manner that enables other groups to be further added therein. Regarding the recitation of -T-, this inclusion is indefinite because the formula of claim 2 is not written in a manner that enables other groups to be further added therein. As such, claim 4 does not properly further limit the polymer of the formula of claim 2.

7. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In addition to the reasons already set forth above for claim 4, which apply to claim 6 by virtue of its dependency on claim 4, claim 6 also recites "wherein the polymer comprises a repeating unit of the formula



However, claim 4, from which this claim depends, requires an Ar^3 unit. Therefore, this claim is indefinite because it is unclear whether or not the Ar^3 units are contained in the polymer or not. Regarding the recitation of -T-, this inclusion is indefinite because the formula of claim 2 is not written in a manner that enables other groups to be further added therein. As such, claim 20 does not properly further limit the polymer of the formula of claim 2.

8. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In addition to the reasons already set forth above for claim 4, which apply to claim 6 by virtue of its dependency on claim 4, claim 6 also recites "wherein the polymer is a homopolymer of the formula



However, it is unclear if the presently recited units of Ar³ are referring back to the previously recited units Ar³ set forth in claim 2 or not. Furthermore, if the presently recited units of Ar³ are referring back to the Ar³ units from claim 2, then it is further unclear how the present Ar³ units can be repeating, since claims fails to set Ar³ as repeating. Additionally, if Ar³ is separate and distinct from the previous recitations thereof, then the claim is further unclear because the formula of claim 2 is not written in a manner that enables other groups to be further added therein.

9. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites "The polymer according to claim 1, wherein Ar³ stands for phenyl, or 1- or 2-naphthyl which phenyl or 1- or 2-naphthyl can be substituted one to three times with C₁-C₈alkyl and/or C₁-C₈alkoxy". This recitation renders the claim indefinite because it is dependent on claim 1, which has been cancelled.

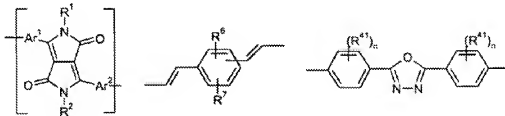
Allowable Subject Matter

10. Claims 2, 8, 10-12, 14, 19, 22 and 24 are allowed.
11. The following is a statement of reasons for the indication of allowable subject matter:

a. Regarding independent claim 2, a search of the prior art does not disclose or reasonably suggest the polymer compound claimed with Ar^1 and Ar^2 each being the groups claimed.

The closest prior art of Tiecke ('459) teaches the diketopyrrolopyrrole polymer which can include, for example, thiophene or pyridine, but Tiecke also includes phenyl groups whereas Ar^1 and Ar^2 of claim 2 do not have any phenyl.

b. Regarding independent claim 8, a search of the prior art does not disclose or reasonably suggest the polymer compound as a terpolymer as claimed including these three groups:



with the substituents of R^1 , R^2 , Ar^1 , Ar^2 , R^6 , R^7 , R^{41} and n as set forth by the claim.

The closest prior art of Tieke ('459) teaches the diketopyrrolopyrrole polymer which can include a dipropylene benzene group, but Tieke does not teach that the polymer also includes the 2,5-diphenyl-1,3,4-oxadiazole group.

c. Regarding independent claim 22, a search of the prior art does not disclose or reasonably suggest the polymer compound claimed with Ar¹ and Ar² each being the groups claimed.

The closest prior art of Tieke ('459) teaches the diketopyrrolopyrrole polymer which can include a dipropylene benzene group, but Tieke does not teach that the polymer also includes the 2,5-diphenyl-1,3,4-oxadiazole group.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- i. Tieke ('459) teaches the diketopyrrolopyrrole polymers for organic light emitting devices.
- ii. Chan (J. Am. Chem. Soc., Vol. 115), Yu (Appl. Phys. Lett., Vol. 64) and Beyerlein (Synth. Met., Vol. 130) each teach diketopyrrolopyrrole co-polymers with functional such as phenyl and thiophene.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW W. SUCH whose telephone number is (571)272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kiesha Bryant can be reached on (571) 272-1844. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew W. Such/
Examiner, Art Unit 2891